

REMARKS

Claims 1-22 are pending in the present application. Claims 1, 2, 6, 7, 10, and 11 are rejected under 35 U.S.C. 102(b), and claims 3-5, 8, 9, and 12-22 are rejected under 35 U.S.C. 103(a). Claims 1 and 20 are amended, and claim 2 is canceled. No new matter is added. The rejections are respectfully traversed in light of the following remarks, and reconsideration is requested.

LAW OFFICES OF
MACHERSON KWOK
CHEN & HO LLP

1762 Technology Drive
Suite 206
San Jose, CA 95110
(408) 752-7049
FAX (408) 752-7049

Rejections under 35 U.S.C. § 102(b)

Claims 1, 2, 6, 7, 10, and 11 were rejected under 35 U.S.C. 102(b) as being anticipated by Thompson (U.S. 5,037,174). In rejecting claim 2, the Examiner states, in part, that "Thompson teaches that the modifying comprises removing material from the at least one end of the optical fiber member (column 5, lines 21-30)".

Applicant respectfully disagrees. At column 5, lines 21-30, Thompson states:

The stepwise increase in acceleration results in a jerking action that is imposed on the fiber and causes the first portion 43A and the second portion 54B thereof to separate at the separation point S, as seen from Fig. 2. The jerking action sharply changes the slope of the taper, as is best seen at reference characters 56A, 56B in the FIGS. 2 and 3A. Moreover, the jerking separation of the fiber into the first and second portion pulls out a nipple-like extension 58A, 58B of material as the fiber separates into two parts.

This is simply disclosing that the fiber is quickly pulled, resulting in a separation into two fibers and the formation of a nipple-like extension at the ends of both fibers. No where is there any disclose that material is removed from an end. The pulling action, along with exposure to the arc energy, results in the ends tapering and forming the nipple-like extensions. (Col. 4, lines 27-31, col. 4, lines 45-52, col. 4, line 63 to col. 5, line 35, col. 5, lines 41-55; Figs. 1, 2, and 3A).

Claim 1 has been amended to include the limitations of claim 2. Applicant respectfully requests entry of the amendment under 37 C.F.R. 1.116, as no new matter is introduced and no new search is required. Because Applicant believes Thompson does not teach "removing material from said at least one end of the optical fiber member", as recited in claim 1, claim 1 is patentable over Thompson.

LAW OFFICES OF
MACPHERSON KWOK
CHEN & BEID LLP

1762 Technology Drive
Suite 310
San Jose, CA 95110
(408) 752-7040
FAX (408) 752-7049

Claim 2 is canceled. Claims 6, 7, 10, and 11 depend on claim 1 and are thus patentable over Thompson for at least the same reasons as claim 1.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejections of the claims 1, 2, 6, 7, 10, and 11 under 35 U.S.C. § 102(b).

Rejections under 35 U.S.C. § 103(a)

Claims 3-5, 13-17, and 20 were rejected under 35 U.S.C. 103(a) as unpatentable over Thompson in view of Yamane et al. (U.S. 5,459,803). Yamane is cited, inter alia, for "etching the at least one end of the optical fiber member".

However, Applicant contends that the obviousness rejection under 35 U.S.C. § 103 cannot be established by combining the teachings of Thompson and Yamane et al. because there is no suggestion or motivation in the cited references for the combination. "For a proper obviousness combination, the prior art references must provide a suggestion or motivation to make such a combination." Heidelberger Druckmaschinen AG v. Hantscho Commercial Prods., Inc., 21 F.3d 168, 1072, 30 USPQ2d 1377, 1379 (Fed. Cir. 1994) *citing* Northern Telecom Inc. v. Datapoint Corp., 908 F.2d 931, 934 15 USPQ2d 1321, 1323 (Fed. Cir. 1990).

In particular, Yamane discloses an optical fiber 10 comprising "a core 11 made of a quartz-based glass and a clad 12 made of another quartz-based glass which surrounds the core." (Yamane, col. 5, lines 12-14; Fig. 4). As shown in Figs. 4-8 and 10-14, the optical fiber has an end surface that is "flat and perpendicular" to the axial direction of the fiber. (Yamane, col. 5, lines 19-29, col. 6, lines 4-9, col. 7, lines 54-59, col. 8, lines 23-27, 33-35, and 39-43, and col. 9, lines 19-30). In other words, the optical fiber of Yamane has a significant clad portion, all of which is flat at the end of the fiber. A key objective in Yamane is having an "optical fiber with a lens which is free of any tapered portion". (Yamane, col. 3, lines 26-28 and col. 6, lines 4-8). At the middle of the fiber, the core 11 projects out from the

LAW OFFICES OF
MACPHERSON KWOK
CHEN & HEID LLP
1763 Technology Drive
Suite 226
San Jose, CA 95110
(408) 733-7040
FAX (408) 752-7049

flat portion of the clad that is either a curved or rounded shape as shown in Figs. 4-7 and 10-14, a truncated cone shape as shown in Fig. 8, or a conical shape as shown in Fig. 14. Thus, Yamane discloses a quartz-based optical fiber having a central core portion that is shaped (round, truncated cone, or conical) and an outer clad portion that is flat. Etching using HF acid provides a higher etching speed in the core portion than in the clad portion "to form a projecting core of a truncated cone shape on the end surface". (Yamane, col. 4, lines 14-18 and col. 8, lines 28-35) (emphasis added). Thus, the etching of Yamane is to form a flattened portion on the end surface.

On the other hand, Thompson, as discussed above, is directed to forming an optical fiber having a nipple-like extension, which is then rounded into an aspherical shape using arc energy. (See, e.g., Thompson, col. 5, lines 21-55; Fig. 2). At no point in the fiber formation does the fiber have a truncated cone shape or a flattened shape.

Obviousness is tested by "what the combined teachings of the references would have suggested to those of ordinary skill in the art." In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). But obviousness "cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination." ACS Hosp. Sys. Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). Thus, "teachings of references can be combined only if there is some suggestion or incentive to do so." Id. Applicant, thereby, contends that there is no suggestion or incentive to combine Thompson and Yamane because Thompson and Yamane are directed to very different processes for forming a lens on an optical fiber, as outlined above.

Thus, for an obviousness combination, the "critical inquiry is whether 'there is something in the prior art as a whole to suggest the desirability, and thus the obviousness of making the combination.'" Fromson v. Advance Offset Plate, Inc., 755 F.2d 1549, 1556, 225

LAW OFFICES OF
MACPHERSON KWOK
CHEN & HEID LLP
1753 Technology Drive
Suite 226
San Jose, CA 95110
(408) 752-7040
FAX (408) 752-7049

USPQ 26, 31 (Fed. Cir. 1985) *quoting* Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co., 730 F.2d 1453, 1452, 221 USPQ 481, 488 (Fed. Cir. 1984). In other words, the “mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.” *In re Gordon*, 773 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984) *citing* Carl Schenck, A.G. v. Nortron Corp., 713 F.2d 782, 787, 218 USPQ 698, 702 (Fed. Cir. 1983). In the present case, there is not suggestion of the desirability of a combination of Thompson and Yamane because, as mentioned above, Thompson and Yamane use different processes to achieve different types of lens shapes, i.e., aspherical versus truncated cone. Etching of Yamane is to create a truncated cone shape; the pulling and heating of Thompson is to create a nipple-like extension and an aspherical shape, respectively, at the end of the fiber. As such, there would be no reason to etch the fiber using HF acid. Applicant would not even know how to modify the process of Thompson to use HF acid to etch the fiber, as the invention of Thompson is to first pull and separate a fiber into two parts to create a nipple-like extension at the two ends and to then expose the ends to arc energy to smooth out the extension and form an aspherical lens surface. Accordingly, Thompson does not suggest to one skilled in the art the desirability to combine with Yamane, and in fact, may not even make it possible to practice the invention of Thompson if the combination with Yamane is actually practiced.

Furthermore, the “statute, §103, requires much more, i.e., that it would have been obvious to produce the claimed invention at the time it was made without the benefit of hindsight.” Orthokinetics, Inc. v. Safety Travel Chairs, Inc., 806 F.2d 1565, 1575, 1 USPQ2d 1081, 1087 (Fed. Cir. 1986). “When prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself.” Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985) *citing* ACS

LAW OFFICES OF
MACPHERSON KWOK
CHEN & HEID LLP
1762 Technology Drive
Suite 226
San Jose, CA 95110
(408) 752-1040
FAX (408) 752-7049

Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577 & n.14, 221 USPQ 929, 933 & n.14 (Fed. Cir. 1984). Applicant believes the motivation to combine Thompson with Yamane is derived from Applicant's invention since there is no suggestion in the cited references for the desirability of such a combination, as discussed above.

Therefore, because Applicant contends that the combination of Thompson and Yamane is improper, Applicant believes claims 3-5, 13-17, and 20 are patentable over Thompson in view of Yamane.

Similarly, since independent claim 1 recites removing material from an end of a fiber, claim 1, along with its dependent claims, are patentable over Thompson in view of Yamane.

Claims 8 and 9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson in view of Cesaroni (U.S. Pub. 2003/0029040). Cesaroni is cited for disclosing removing and heating material both ends of the fiber, but does not teach removing material from the fiber to form continuously tapered ends and then applying heat to form a continuously tapered lens surface. Because Cesaroni does not remedy the deficiencies of Thompson as discussed above with respect to claim 1, claims 8 and 9, which depend on claim 1, are patentable over Thompson in view of Cesaroni.

Claim 12 was rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson in view of Grasso, III et al. (U.S. Pat. 6,375,651). Grasso, III et al. was cited for disclosing moving the modified end of the fiber to a spark. However, Grasso, III et al. does not remedy the deficiencies of Thompson as applied to claim 1 and discussed above, i.e., removing material from the fiber to form continuously tapered ends and then applying heat to form a continuously tapered lens surface. Therefore, because claim 12 depends on claim 1, claim 12 is patentable over Thompson in view of Grasso, III et al.

Claims 18 and 19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson in view of Yamane and Cesaroni. Claims 18 and 19 depend on claim 13. As

LAW OFFICES OF
MACPHERSON KWOK
CHEN & BEID LLP
1762 Technology Drive
Suite 226
San Jose, CA 95110
(408) 752-7040
FAX (408) 752-7040

discussed above, claim 13 is believed patentable over Thompson in view of Yamane.

Cesaroni is cited for disclosing removing and heating material both ends of the fiber, but does not remedy the deficiencies of Thompson and Yamane. Therefore, claims 18 and 19 are patentable over the cited references.

Claims 21 and 22 were rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson in view of Yamane and Wei et al. (U.S. Pub. 2004/0134884). Wei et al. is cited for disclosing oil placed on the top surface of an etching liquid. Wei et al. discloses coating a fiber with a "relatively thick coating layer 330" and then immersing the end of the fiber into an HF solution to form a tip of a probe. (Wei, paragraphs [0022] to [0025]; Figs. 3A-3C). Thus, in general, Wei discloses forming an end of a fiber by immersion in an etching liquid. However, as discussed above with respect to Yamane, there is no motivation in Thompson to use an HF solution to etch away material to form a lens. In addition, Wei discloses using HF solution to form the final probe tip, which is vastly different than Applicant's invention recited in claims 1 and 13, in which material is first removed to modify a fiber end and then the lens surface is formed by heating the modified end.

Therefore, because claims 21 and 22 depend on claims 1 and 13, respectively, claims 21 and 22 are patentable over the cited references.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejections of the claims 3-5, 8, 9, and 12-22 under 35 U.S.C. § 103(a).

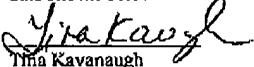
LAW OFFICES OF
MACPHERSON KWOK
CHEN & KIM LLP
1762 Technology Drive
Suite 226
San Jose, CA 95110
(408) 252-7040
FAX (408) 752-7040

CONCLUSION

For the foregoing reasons, Applicant believes pending claims 1 and 3-22 are allowable, and a notice of allowance is respectfully requested. If the Examiner has any questions regarding the application, the Examiner is invited to call the undersigned Attorney at (949) 752-7040.

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Tina Kavanaugh

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Respectfully submitted,



Tom Chen
Attorney for Applicant
Reg. No. 42,406

LAW OFFICES OF
MACPHERSON KYOK
CHEN & HEID LLP

1762 Technology Drive
Suite 225
San Jose, CA 95110
(949) 752-7040
FAX (949) 752-7049